Remarks

Claim 25 has been amended to incorporated features of claims 13 and 15 and thus, do not require any further searching. Moreover, the amendment places the claims in better condition for appeal. Therefore, the amendment should be entered.

The claims have again been rejected as being obvious in view of Pennsylvania Department of Environmental Protection "Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania" and, in particular, Figure 7.12. Applicant respectfully traverses because Figure 7.12 does not teach or suggest each of the limitations required by the claims.

Applicant disagrees with the Examiner's characterization of the differences between the prior art and the claimed invention because the Examiner only notes a single difference. The Examiner states:

> The difference between the prior art and the claimed invention is that the claimed invention responds to fluctuation of process parameters by an automated feedback control loop and the prior [art] requires a manual response.

While that difference does exist, there is no recognition in the prior art (or by the Examiner) of the fact that the prior art simply does not and cannot control the heat loss from the confined volume effectively to zero, as required by the claims. Because there has been no articulation as to why this difference would have been obvious to one of skill in the art, a *prima facie* of obviousness has not been established and the claims should be allowed.

The present invention relates to a method by which an operating biological heap can be simulated. The method includes a housing, i.e., a column apparatus that represents a notional vertical pillar taken through the heap. Therefore, to simulate the insulating effect of the substantial ore mass that exists around any given pillar (that is of course not located at a heap boundary) and to replicate the leaching activity that occurs within the heap, the claimed column is provided with a plurality of temperature sensors and a plurality of independently controllable heating elements (i.e., sources). Each sensor and element measures and maintains the temperature of the ore material in a particular transverse columnar segment. Thus, in response to a monitored temperature from a particular temperature sensor, a particular respective heating element (source) is activated or deactivated to force the temperature gradient across the column walls of the respective transverse segment, effectively to zero. As a result, the temperature of each segment can be maintained independently of the temperature in vertically adjacent segments.

Advantageously, the claimed process provides a mechanism where high temperature zones (areas of effective bioleaching) can be detected and the position of such can be manipulated by varying process parameters such as liquid flow from the top and/or gas flow from the bottom, or by heating a particular segment with the respective heat source(s). In addition, the process of the present invention allows the measurement of the energy input from a particular heat source to a respective segment

to maintain the heat loss effectively to zero. This measurement is useful in determining the rate at which heat is lost via the liquid and gas flow streams.

In contrast, the neither the cited device (Figure 7.12) nor the described method of operating that device contemplate the above features of the claimed method. In fact, the device of Figure 7.12 is not capable of independent control of a plurality of heat sources necessary to simulate an operating heap leach with its vertically variant temperature zones. In other words, the device of Figure 7.12 does not teach or suggest controlling heat loss from the confined volume, independently at a plurality of transverse segments, effectively to zero, as required by the claims. The device of Figure 7.12 merely teaches a device that takes on the temperature of the heat source, which is fundamentally different from the claimed process where each heat source takes on the temperature of the respective transverse segment of the column. Accordingly, the device of Figure 7.12 does not and cannot render obvious the presently claimed method. Applicant respectfully requests withdrawal of the rejection and allowance of the claims.

Applicant believes that claims 13 and 15-25 are allowable and respectfully requests acknowledgement of such. However, in the unlikely event the claims are not allowed, Applicant submits that the finality of the present rejection should be withdrawn. The present rejection is not complete because it does not address each of the limitations required by the claims and particularly those that are not present in the prior art. For example, the present rejection never addresses the method requires

"controlling heat loss from the confined volume effectively to zero". Thus, the rejection is incomplete and cannot be final. The Examiner is invited to contact the undersigned attorney for the Applicant via telephone at (312) 321-4276 if such communication would expedite allowance of this application.

Respectfully submitted,

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